

Properties of Light and Electricity

4-5 The student will demonstrate an understanding of the properties of light and electricity. (Physical Science)

4-5.8 Classify materials as either conductors or insulators of electricity.

Taxonomy level: 2.3-B Understand Conceptual Knowledge

Previous/Future knowledge: In 3rd grade (3-4.3), students explained how heat moves easily from one object to another through direct contact in some materials (called conductors) and not so easily through other materials (called insulators). Students will be introduced to the concept of electricity and materials that conduct or insulate electricity for the first time at this grade level.

It is essential for students to classify materials as conductors or insulators of electricity based on whether they allow electric current to flow through the circuit or not as described below:

Conductors

- *Conductors* allow electric current to flow through them in an electric circuit.
- If a bulb stays lit when an object is added to an electric circuit, the material is conducting the current through the circuit, and it is a conductor.
- Metals are conductors of electricity.

Insulators

- *Insulators* do not allow electric current to flow through them in an electric circuit.
- If a bulb does not stay lit when an object is added to an electric circuit, the material does not conduct current, and it is an insulator.
- Plastics and wooden materials are examples of insulators.

It is not essential for students to explain why some materials conduct electricity and others do not.

Assessment Guidelines:

The objective of this indicator is to *classify* materials as conductors or insulators of electricity; therefore, the primary focus of assessment should be to group materials as insulators or conductors based on whether they allow electric current to flow through them or not. However, appropriate assessments should also require students to *interpret* a diagram of a series circuit with an object in the circuit as being a conductor if the light is on and an insulator if the light is not; *exemplify* materials that are conductors or insulators; or *recognize* an object as a conductor or insulator based on what it is made of.